

ABSTRACT OF THE DISCLOSURE

A multi-carrier communication system such as an OFDM or DMT system has nodes which are allowed to dynamically change their receive and transmit symbol rates, and the number of carriers within their signals. Changing of the symbol rate is done by changing the clocking frequency of the nodes' iFFT and FFT processors, as well as their serializers and deserializers. The nodes have several ways of dynamically changing the number of carriers used. The selection of symbol rate and number of carriers can be optimized for a given channel based on explicit channel measurements, *a priori* knowledge of the channel, or past experience. Provision is made for accommodating legacy nodes that may have constraints in symbol rate or the number of carriers they can support. The receiver can determine the correct symbol rate and number of carriers through *a priori* knowledge, a first exchange of packets in a base mode that all nodes can understand, or an indication in the header of the data packet which is transmitted in a base mode of operation that all nodes can understand.